

Amendments to the Claims

The below listing of the claims replaces all prior versions and listings of the claims in the subject application:

Listing of the Claims:

1. (canceled)

2. (canceled)

3. (canceled)

4. (canceled)

5. (canceled)

6. (canceled)

7. (canceled)

8. (canceled)

9. (canceled)

10. (canceled)

11. (canceled)

12. (canceled)

13. (previously presented) A microsensor system, comprising:

Inventor: Russell

- an actuator;
- a microprobe proximate the actuator, wherein the microprobe comprises:
 - a housing having an aperture;
 - an ISFET attached to the housing, wherein the ISFET has a gate located proximate the aperture; and
 - a reference electrode attached to the housing proximate the aperture; and
- a cantilever arm attached to the actuator and the microprobe.

14. (canceled)

15. (original) The microsensor system of claim 13, wherein the actuator is a piezoelectric actuator.

16. (original) The microsensor system of claim 13, wherein the actuator is an electromagnetic actuator.

17. (canceled)

18. (canceled)

19. (canceled)

20. (canceled)

21. (canceled)

22. (canceled)

23. (canceled)

24. (canceled)

25. (canceled)

26. (canceled)

27. (canceled)

28. (canceled)

29. (currently amended) ~~The microprobe of claim 28, further comprising~~ A microprobe, comprising:

a housing having an aperture;

an ion sensitive field effect transistor (ISFET) attached to the housing, wherein the ISFET has a gate located proximate the aperture;

a reference electrode attached to the housing proximate the aperture, wherein the housing is a hermetically sealed encapsulant, and wherein at least a portion of the gate and at least a portion of the reference electrode are located within the aperture, and wherein the ISFET is configured to operate as a pH sensor; and

a second ISFET, wherein the second ISFET is configured to operate as a blood gas sensor, and wherein the second ISFET has a gate located proximate the aperture.

30. (canceled)

31. (currently amended) ~~The microprobe of claim 30, further comprising~~ A microprobe, comprising:

a housing having an aperture;

an ion sensitive field effect transistor (ISFET) attached to the housing, wherein the ISFET has a gate located proximate the aperture;

a reference electrode attached to the housing proximate the aperture, wherein the housing is a hermetically sealed encapsulant, and wherein at least a portion of the gate and at least a portion of the reference electrode are located within the aperture;

a substrate attached to the housing, wherein the ISFET and the reference electrode are integrally formed on the substrate, wherein the ISFET and the reference electrode are monolithically integrated, and wherein the ISFET and the microelectrode are located on a portion of the substrate that includes the aperture;

associated circuitry monolithically integrated with the ISFET and the reference electrode, wherein the associated circuitry comprises a temperature sensing diode, and wherein the ISFET is configured to operate as a pH sensor; and

a second ISFET, wherein the second ISFET is configured to operate as a blood gas sensor, and wherein the second ISFET has a gate located proximate the aperture.

32. (previously presented) The microprobe of claim 31, further comprising an antenna and a capacitor, wherein the capacitor is electrically coupled to the ISFET, the second ISFET, the temperature sensing diode, and the antenna, and wherein the capacitor is configured to store electromagnetic energy received by the antenna.

33. (previously presented) The microprobe of claim 32, further comprising a control module communicatively coupled to the ISFET, the second ISFET, the temperature sensing diode and the reference electrode.

34. (previously presented) The microprobe of claim 33, wherein the control module is hand-held.

35. (previously presented) The microprobe of claim 33, further comprising an electromagnetic transmitter configured to wirelessly transmit data from the ISFET, the second ISFET, and the temperature sensing diode to the control module.

36. (previously presented) The microprobe of claim 35, wherein the associated circuitry further comprises a logic array configured to perform statistical algorithms on the data from the ISFET, the second ISFET, and the temperature sensing diode.

37. (canceled)

38. (canceled)

39. (canceled)

40. (canceled)

41. (canceled)

42. (canceled)

43. (canceled)

44. (previously presented) The microsensor system of claim 13, wherein the microprobe is configured to be broken off of the cantilever arm once the microprobe is inserted into dermis.

45. (previously presented) The microsensor system of claim 13, wherein the microsensor system is flexible, such that the microsensor system is configured to conform to the skin of a patient.